



**The National Science
Foundation
Open Government
Directive Plan**

September 2010

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I. EXECUTIVE SUMMARY

The National Science Foundation is committed to meeting President Obama's goal of transparency as specified in his January 21, 2009 memorandum: Transparency and Open Government. Office of Management and Budget (OMB) Director Orszag sent a memorandum to the heads of executive departments on December 8, 2009, directing specific actions that need to be executed to implement the principles of transparency, participation and collaboration.

Since its creation in 1950, the NSF has viewed openness as a critical element for achieving the agency's mission: "To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense (NSF Act of 1950)." As a result, the agency has built a strong foundation of openness policies and practices that guide its research and education activities. New technologies, many of which received their basic funding from the NSF, now provide the means for the NSF to take these practices to the next level.

In response to the OMB memorandum, NSF adopted an Open Government Plan and published it on its Open Government web page in April 2010. The plan describes how the NSF will "improve transparency and integrate public participation and collaboration into its activities." The NSF has always been an open agency making all of its data, within the constraints of confidentiality and privacy, openly available via its website. The NSF Open Government plan complements the NSF FY2006 – 2011 Strategic Plan¹ which identifies four core values: visionary, dedicated to excellence, broadly inclusive and accountable.

The key principle to be applied in executing the elements of the NSF Open Government Directive Plan is: *Unless shown otherwise, the default position shall be to make NSF data and information available in an open machine-readable format.*

Evaluators for the White House Chief Technology Officer and Chief Information Officer assessed how well NSF's Open Government Plan, as well as the plans of the other federal departments and agencies, met the objectives of the Open Government Directive in six major categories, and the ratings were published in an online dashboard (<http://www.whitehouse.gov/open/around>). NSF was rated as making progress toward expectations (yellow) in five of the areas measured: (1) overall plan; (2) formulating the plan; (3) transparency; (4) participation; and (5) collaboration. In the sixth category, flagship initiative, NSF was rated as meeting expectations (green). When NSF released its initial plan, the agency signaled its commitment to updating and improving the plan in response to public input, and to continuing internal discussions about how NSF can be more transparent, participatory and collaborative.

This updated version of the plan (version 1.1) responds to comments NSF received and reflects the intent to revise and improve the plan to achieve an "all green" rating

¹ http://www.nsf.gov/about/performance/strategic_plan.jsp

and meet every requirement under the Open Government Directive. To ensure steady progress, NSF welcomes comments and suggestions on this version of its Open Government Plan, at opengov@nsf.gov. The NSF, from its senior management through the entire foundation, is committed to the principles set forth in this plan

II. NSF OPEN GOVERNMENT DIRECTIVE (OGD) IN CONTEXT

A. Open Government Directive: Overview

In one of his first actions after taking office, President Obama issued a memorandum stating the Administration's commitment to "creating an unprecedented level of openness in Government." The key principles of open government are transparency, public participation, and collaboration:

***Transparency** promotes accountability by providing the public with information about what the Government is doing.*

***Participation** allows members of the public to contribute ideas and expertise so that their government can make policies with the benefit of information that is widely dispersed in society.*

***Collaboration** improves the effectiveness of Government by encouraging partnerships and cooperation within the Federal Government, across levels of government, and between the Government and private institutions.*

On December 8, 2009, Peter R. Orszag, then Director of the Office of Management and Budget (OMB), issued a memorandum, the Open Government Directive (OGD), to the heads of executive departments and agencies directing them to take the following steps toward the goal of creating a more open government:

1. Publish government information online;
2. Improve the quality of government information;
3. Create and institutionalize a culture of open government; and
4. Create an enabling policy framework for open government.

NSF has designated its Chief Technology Officer (CTO), as the agency's high level senior official accountable for Open Government. NSF met the OGD's January 22, 2010, deadline for identifying and publishing online at least three high value data sets in Data.gov; by publishing four high value data sets at that time:

1. NSF Freedom of Information Act Report for October 1, 2008 through September 30, 2009
2. NSF Research Grant Funding Rates
3. NSF Graduate Research Fellowship Program Honorable Mention Recipients, 2000-2009
4. NSF Graduate Research Fellowship Program Award Recipients, 2000-2009

NSF also met the February 6, 2010, deadline for launching an Open Government Web page (<http://www.nsf.gov/open>). The page serves as the gateway to NSF open government activities and included the use of a Web platform provided by the

General Services Administration to solicit public and staff input on NSF's Open Government Plan. That public engagement activity using the IdeaScale tool ran from February 6-March 19, 2010.

To create and institutionalize a culture of open government, the OMB memorandum stated that "within 120 days [April 7, 2010] each agency shall develop an Open Government Plan that describes how the agency will improve transparency and integrate public participation and collaboration into its activities." On April 7, 2010, NSF published the NSF Open Government Directive Plan: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf10049.

The NSF Open Government Plan is a roadmap for its efforts to:

- Improve transparency through identifying and making available to the public more high value data;
- Expand opportunities for public participation and better integrate public input into NSF programs and policies; and
- Seek out new or expanded opportunities for collaborations with other agencies throughout government and with private institutions through public-private partnerships.

NSF provided the public with an opportunity to comment on this plan, using the same IdeaScale tool that was used initially to solicit ideas for the plan. The second comment period ran for six weeks, and ended on June 23, 2010. NSF received fewer comments during the second comment period, and the agency is now looking at additional methods and tools that could lead to more robust public engagements. NSF continues to encourage the public to send comments about the plan and its implementation to opengov@nsf.gov.

B. NSF Organizational Structure and Governance

The National Science Foundation is an independent federal agency created by Congress in 1950. The NSF mission is:

"To promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense (NSF Act of 1950)"

The NSF is the only federal agency whose mission includes support for all non-medical fields of fundamental science and engineering. The NSF is the major source of federal funding for areas such as mathematics, computer science and the social sciences in addition to providing approximately 20 percent of all federal funding in basic research. NSF funds research and education in most fields of science and engineering to more than 2,000 colleges, universities, K-12 school systems, businesses, informal science organizations and other research organizations throughout the U.S. Each year, the NSF processes over 40,000 proposals that result in over 10,000 awards supporting 200,000, on average, U.S. scientists, engineers,

educators and students at universities, laboratories and field sites all over the United States and throughout the world.

NSF leadership has two major components: a Director who oversees NSF staff responsible for program creation and administration, merit review, planning, budget and day-to-day operations; and a 24-member National Science Board (NSB) of eminent individuals that meets six times a year to establish the overall policies of the agency. The Director and all Board members serve six-year terms. Each of them, as well as the NSF Deputy Director, is appointed by the President of the United States and confirmed by the U.S. Senate. At present, NSF has a total workforce of about 2,100 at its Arlington, VA, headquarters, including approximately 1,400 career employees, 200 scientists from research institutions on temporary duty, 450 contract workers and the staff of the NSB office and the Office of the Inspector General.

The NSF program staff is divided into the following directorates and offices supporting science and engineering research and education:

Biological Sciences (BIO)	Computer and Information Science and Engineering (CISE)
Engineering (ENG)	Geosciences (GEO)
Mathematical and Physical Sciences (MPS)	Social, Behavioral and Economic Sciences (SBE)
Education and Human Resources (EHR)	Office of Polar Programs (OPP)
Office of Integrative Activities (OIA)	Office of International Science and Engineering (OISE)
Office of Cyberinfrastructure (OCI)	

An NSF Assistant Director or an Office Director, as appropriate, heads each of these NSF organizational units. The Office of the Director is responsible for executive, business and administrative management functions. The Office of the Director includes the Office of Equal Opportunity Programs, the Office of the General Counsel, and the Office of Legislative and Public Affairs. Two additional administrative offices are the Office of Budget, Finance and Award Management and the Office of Information and Resource Management. These organizational units of NSF are devoted to financial management, award processing and monitoring, legal affairs, outreach and other functions.

The Office of Inspector General (OIG) provides independent oversight of the agency's programs and operations. The office is responsible for promoting efficiency and effectiveness in agency programs and for preventing and detecting fraud, waste, and abuse. By statute, the NSF OIG is independent from the agency, with the IG reporting directly to the National Science Board and the Congress.

C. NSF Open Government Directive Working Group

In January 2010, NSF created an internal NSF Open Government Directive Working Group (OGD-WG) to address the Open Government Directive (OGD). This working group which meets on a monthly basis is comprised of individuals from across the Foundation (including representation from the Office of the General Counsel, the Chief Information Officer the Chief Financial Officer and the Chief Technology Officer) and was created to develop and help implement NSF's Open Government Plan and its values of: transparency, collaboration and participation.

NSF's commitment to the Open Government initiative is demonstrated by the recent creation of a new position at NSF, the Chief Technology Officer (CTO), whose duties include serving as the Senior Accountable Official (SAO) for NSF's Open Government activities. The CTO is in the Office of the Director and is a member of NSF's Senior Management Advisory Roundtable (SMART) and chairs the NSF Open Government Working Group. In that capacity periodic reports will be made to SMART on matters related to NSF Open Government, and related activities such as prizes and challenges.

At present the NSF OGD WG consists of:

- the OGD Senior Accountable Official (NSF CTO), Chair
- representative from the Office of the General Counsel
- the NSF Chief Information Officer
- the NSF Chief Financial Officer
- representative from the NSF Office of Legislative and Public Affairs
- representative from the Directorate of Social, Behavioral and Economic Sciences
- representative from the Office of Information & Resources Management
- representative from the Office of Budget, Finance and Award Management
- representative from the Office of Cyberinfrastructure

The NSF OGD-WG has developed an implementation plan, with near-term activities that include the following:

Date	Action
10Aug10	Held 2 nd NSF OGD Discussion with NSF Senior Management (SMART) (Quarterly)
10Aug10	Held SMART Discussion regarding NSF Prizes/Challenges alternatives
20Aug10	Held NSF Open Gov't WG meeting (Monthly)

30Aug10	Determine timetable for revised NSF datasets and/or data access
17Sep10	Update current NSF Open Government Directive Plan dated 17Apr10 to reflect external audit results, corrections/revisions and additions such as data inventory update
2Dec10	Present NSF Open Government activities to the National Science Board (NSB) and solicit their input/support/commitment
15Dec10	Release results of first of quarterly NSF surveys looking for new high-value datasets
30Dec10	Establish NSF prize/challenge
30Jun11	Update NSF Open Government plan to reflect new NSF Strategic Plan

D. Key Stakeholders, their Roles and their Informational Needs

The NSF stakeholders consist of:

- the tax-paying American public
- academic institutions: graduate/undergraduate colleges and universities, 2-year and community colleges, K-12 schools
- the faculties in the above institutions
- the students in the above institutions
- not-for-profit institutions such as: aquariums, zoos, museums
- businesses conducting science and engineering research
- the news media (as a conduit to the public)
- NSF staff
- other Government agencies

The informational needs of these stakeholders consist of being informed of funding opportunities available through the NSF as they develop, information on awards made; results of studies, reports and workshops supported by the NSF; results of meetings and various evaluation reports; and the discoveries, breakthroughs and other outcomes of NSF-supported research and education and their impact on society.

III. NSF STRATEGIC PLAN AND THE OPEN GOVERNMENT DIRECTIVE

A. Overview of the NSF Strategic Plan² and Key Principles

The NSF FY2006 – 2011 Strategic Plan³ identifies four core values: visionary; dedicated to excellence; broadly inclusive; and accountable. Broadly Inclusive and Accountable are particularly germane to the open government directive. As stated in the NSF Strategic Plan:

***Broadly Inclusive:** seeking and accommodating contributions from all sources while reaching out especially to groups that have been underrepresented; serving scientists, engineers, educators, students and the public across the nation; and exploring every opportunity for partnerships, both nationally and internationally.*

***Accountable:** operating with integrity and transparency, maintaining quality and relevance in administration, management and oversight.*

Clearly, these core values are consistent with the open government directive goals of transparency (Accountable), participation (Broadly Inclusive) and collaboration (Broadly Inclusive). As a result, incorporating the open government directive into the NSF “DNA” will be relatively straightforward.

The NSF Strategic Plan states NSF’s vision as:

Advancing discovery, innovation and education beyond the frontiers of current knowledge, and empowering future generations in science and engineering.

This vision is supported by four interrelated outcome goals: Discovery, Learning, Research Infrastructure and Stewardship:

***Discovery** - fostering research that will advance the frontiers of knowledge with the goal of establishing the nation as a global leader in fundamental and transformational science and engineering.*

***Learning** - cultivating a world-class, broadly inclusive science and engineering workforce, and expanding the scientific literacy of all citizens.*

***Research Infrastructure** - building the nation’s research capability.*

***Stewardship** - supporting excellence in science and engineering research and education through a capable and responsive organization.*

Open government activities will more readily enable the NSF to engage stakeholders and keep them informed about NSF initiatives, directions and accomplishments. In addition, the open government directive will enhance NSF activities that seek to

² NSF is in the process of updating its Strategic Plan 2010-2015

³ http://www.nsf.gov/about/performance/strategic_plan.jsp

ensure the position of the nation as a global leader in science and engineering and expand scientific literacy.

The key principle that will be applied in executing the elements of the NSF Open Government Directive Plan is: *to maximize data that will be made available within the constraints of confidentiality and privacy concerns. Unless shown otherwise, the default position shall be to make NSF data and information available in an open machine-readable format.* The NSF is committed to publishing its data in machine-readable form and seeking public input and review on a regular basis.

That key principle will be complemented by the principles of maintaining an open and active dialog with the public at large and with the various NSF stakeholders and, encouraging all NSF staff to actively participate in Open Government activities.

Out of Scope

Considered out of scope to this NSF open government directive plan is scientific data created as a direct result of research conducted by the research community with NSF support. Open access to such data is currently a topic of active discussion by the NSF Data Working Group, NSF management, the National Science Board and the research communities.

NSF's Award and Administration Guide contains the agency's current policy on Dissemination and Sharing of Research Results. The overarching expectation is that NSF grantees will share their data with other scientists and will submit their findings for publication. The specific policy may be found at:

http://www.nsf.gov/pubs/policydocs/pappguide/nsf10_1/aag_6.jsp#VID4

B. Open Government Strategic Goals and Outcomes

This open government plan will serve as the roadmap to improve transparency, and better integrate public participation and collaboration into its core mission, thereby enabling NSF to become more innovative and efficient. NSF has a long history of making its data readily available to the public via its website and other means, and the agency shall continue to do so. NSF will make the data available in machine-readable form or in more innovative and productive ways to further enhance NSF's openness.

NSF's open government strategic goal is nothing less than an increased public awareness and appreciation of NSF's mission and the agency's contributions to the American citizenry. This will be accomplished by providing data that inform the public about national scientific priorities; NSF funding opportunities; NSF awards made; Freedom of Information Act (FOIA) results; science and engineering advances generated with NSF support; and statistical data related to funding and funding outcomes, to name a few.

IV. OPEN GOVERNMENT OPPORTUNITIES AND STRATEGIES

A. Transparency Initiatives and Prioritization

Responsibility for ensuring transparency at the NSF rests with the NSF Open Government Directive Working Group (OGD-WG) and with the NSF Senior Management Advisory Roundtable (SMART). The OGD-WG meets monthly to discuss new datasets/information that can be made available and updates to the OGD Plan as necessary. Again, the default position is that all data and information will be made available consistent with confidentiality and privacy constraints. The OGD-WG will continue to inventory data collected or generated by NSF, building on eGov content inventory, found at http://www.nsf.gov/policies/egov_inventory.jsp, and records retention schedule, found at <http://www.nsf.gov/policies/records/index.jsp>. NSF will provide opportunities for its stakeholders and the public to determine which datasets are high-value data collections. NSF will then prioritize the conversion to open formats, based on stakeholder and public interest.

The table below shows the list of datasets, and their expected publication dates.

Date	Description
Sep10	2008,2007 NSF FOIA Report
Oct10	2006,2005 NSF FOIA Report
Nov10	2004,2003 NSF FOIA Report
Dec10	2002,2001 NSF FOIA Report
Jan11	2000,1999 NSF FOIA Report
Feb11	1998 NSF FOIA Report
Oct10	2009 Budget Data
Oct10	Research spending and results-project outcomes reports
Nov10	Project Outcome Reports (POR), award information, Principle Investigator (PI) outcomes
Dec10	Integrated NSF calendar tool of upcoming meetings and events
Dec10	WebCASPAR data tool: easy access to a large body of statistical data

	resources for science and engineering (S&E) at U.S. academic institutions
Jan11	Revised award search mechanism
Jan11	NSF Multi-agency funded dataset made available
Sep11	Work with various NSF internal units to discuss transparency implementation such as possibly updating performance goals and/or including Open Government as part of Committee of Visitors (COV) review process

The CTO is in the Office of the Director and is a member of NSF’s Senior Management Advisory Roundtable (SMART) and Chairs the NSF Open Government Working Group as well as serving as the designated NSF OGD Senior Accountable Official. SMART meets weekly and as a result there will be ample opportunity for keeping SMART members informed and engaged about open government directive activities. SMART meetings will provide opportunities to discuss any issues related to open government and to exploit any NSF related open government opportunities as they develop as well as foster discussions related to activities such as prizes and challenges and how NSF might utilize them to further engage the public.

As previously noted, NSF has always been an open agency making data, within the constraints of confidentiality and privacy concerns, openly available via its website. Much of the OGD-WG discussion will center on determining which of the information in the NSF inventory is of sufficiently high value to warrant conversion from existing formats to machine-readable formats such as comma-separated values (CSV) and extensible markup language (XML) files. Special attention will be paid to requests made by the public as to which data they feel might be of most interest. Currently, FOIA reports, award data and spending data appear to have the most interest from the public and thus are considered of high-value.

Openness is an inherent part of NSF culture. As a result, NSF does not have any issues with what should be “open”, since all NSF data and information is openly available within the constraints of confidentiality and privacy concerns. The challenge is in determining which of all of the already available open data is of sufficiently high value to warrant converting to the accepted open formats specified in the open government directive. The strategy shall therefore be, to prioritize among these items using its potential as high value data as the principal criteria as well as requests from the public.

As noted earlier, NSF makes public a wide variety of agency information via the NSF website: <http://www.nsf.gov>. This includes: National Science Board Meeting Announcements and meeting minutes; NSF solicitations; NSF funding trends data; NSF budget information; NSF-related statistical information; lists of publications available for download; award and funding information; minutes from the various

directorates, office- and NSF-wide Advisory Committees; Committee of Visitor Reports for the various directorates and offices; an Events calendar; text of speeches given by the NSF Director and Deputy Director, a list of NSF-related congressional hearings, news releases and media advisories, factsheets about NSF programs and priorities, feature articles, audio podcasts and videos about NSF-supported research results, and the NSF Multimedia Gallery providing images and other visual media for educational and informational use. These, and other items, constitute materials for consideration in the context of the open government directive.

To further enhance transparency, NSF is already actively supporting and participating in key government-wide open government-related initiatives to provide the public with insight into NSF-funded research, spending, and investments. These initiatives include:

- **Recovery.gov** - Provides a central, online location for taxpayers to track NSF spending and activities related to the American Recovery and Reinvestment Act (Recovery Act). Easily accessible, high-value NSF information available through Recovery.gov includes summaries of overall Recovery spending with progress tracked weekly, detailed weekly financial reports, and descriptions of NSF's Recovery plans, including overarching goals for Recovery funds and an accountability plan.
- **Data.gov** - Provides the public with easy access to NSF data in open and machine-readable formats. Initially, NSF has made four high-value data sets, including Freedom of Information Act data from 2008-2009; NSF funding rates for competitive research proposals from FY2009, and information about NSF Graduate Research Fellowship awardees and honorable mention recipients for the past ten years, available through Data.gov. NSF also offers easy, application-driven access to additional NSF data, such as important statistics regarding employment and education information for scientists and engineers, trend information across science and engineering indicators, and key information about NSF-funded grant awards, through three simple-to-use tools. Additionally, NSF will look into opportunities to provide additional high-value data through Data.gov based on input received from the public.
- **USASpending.gov** - Provides financial transparency at the transaction level into NSF financial assistance, including contracts and grants awards. Through this resource, the public can view key details about NSF contracts and awards for free in compliance with requirements set by the Federal Funding Accountability and Transparency Act of 2006. NSF has actively supported USASpending.gov and its mission since its inception and was the first agency to accurately match 100% of major investment contracts to USASpending.
- **Federal IT Dashboard** (it.usaspending.gov) - Offers insight and transparency into NSF's IT portfolio as a whole, as well as into the significant individual technology investments that are critical in supporting NSF's mission and work. Through NSF's IT Dashboard, the public can view plain language descriptions and comprehensible ratings for NSF technology

investments, including ratings on tracking to cost and schedule, evaluation of the investment by the Foundation's CIO, and an overall rating for the investment based on a combination of the other three ratings. The Dashboard also offers information on how NSF technology investments align with the Foundation mission and objectives outlined in the strategic plan, and provides clear performance indicators for evaluating whether investments are meeting their targets. Additionally, the Dashboard offers easily accessible links to investment Exhibit 300s, offering the public a transparent view of NSF investments at the granular level.

In support of these initiatives, NSF has made data easily accessible to the public in machine-readable and open formats that can easily be shared via a variety of mechanisms (email, Facebook, Twitter, etc.), printed, or downloaded for use with data mining and extraction tools. Additionally, all resources offer mechanisms for the public to provide feedback, share their assessments of the quality of information available, and make suggestions for additional NSF information they would like to see made available.

B. Keeping the Public Informed

While increasing transparency through government-wide open government related initiatives, NSF has also proactively identified and developed additional opportunities for improving transparency to the research community and the public. Prime examples of this are evident in Research.gov (<http://www.research.gov>) and its services.

Research.gov is a multi-agency community driven solution, led by NSF that gives the general public, the scientific community, and Congressional staff easy and transparent access to key information and services from multiple agencies in one location. Through current services, such as Research Spending and Results, and new, upcoming services, including Project Outcomes Reporting for the General Public and Science and Innovation, NSF is leveraging Research.gov to improve clarity into federally-funded research and outcomes.

Research Spending and Results provides the public with information about how NSF and National Aeronautics and Space Administration (NASA) grant award dollars are being spent, what research is being performed, and how the outcomes of the research are benefiting society. Research Spending and Results provides the high-value details about research awards that the public and the research community have requested, such as abstracts (descriptions of the planned research at the time the award was made) and publication citations (details and links to magazines and journals that have published the research). Information available through Research Spending and Results is provided in open, accessible formats (XML, CSV, and Excel) and is updated nightly to ensure the public is receiving current information in a timely manner.

The Project Outcomes Report for the General Public is a new report, written in plain language, that provides clear insight into the outcomes and broader impacts of NSF-funded research and education in compliance with mandates set by the America COMPETES Act (HR 2272) requirement: Publishing of Research Results. These reports, which provide snapshots of the outcomes at the end of an award, are authored by the researchers, providing the public with first person accounts from the individuals on the forefront of scientific discovery. The reporting tool also provides the capability to include images to accompany reports and the ability for investigators to add to the report over time, so information about the broader, future impacts of the research can easily be made available. Within 24 hours of submission, reports will be made available for the public to view online through Research Spending and Results.

The Project Outcomes Report submission capability was recently released on Research.gov. To ensure the public is aware of this new resource for information on federal research outcomes, NSF is developing a comprehensive, multi-channel communications plan. Potential tactics for promoting awareness about the availability of this information on Research.gov include direct outreach with members of the research community and the public at industry events, highlighting new information in Foundation publications such as the Foundation newsletter and Research.gov newsletter, and leveraging new and emerging media, including webcasts and social media, to direct members of the public to Research.gov for details about the outcomes of federally funded research. Additionally, as NSF begins to receive reports and the public begins to view the submitted reports, NSF will monitor its online feedback mechanisms for input received from the public regarding the quality and comprehensibility of the reports. NSF will then use this feedback to develop outreach and training materials to help researchers improve and better target the information included in their reports to the general public. NSF will also develop outreach materials that encourage researchers to continue adding to their reports after initial submission in order to provide the public with a comprehensive, robust view of the impacts of the research.

Science, Engineering & Education Innovation

NSF is developing a new Science, Engineering & Education Innovation (“SEE Innovation”) website that will provide transparent, open access to a collection of information about the outcomes and impact of NSF-funded research and education activities. The site will provide a broad view of NSF, and spotlight investment outcomes that benefit the larger society, in addition to advancing science and engineering. Featured content includes project highlights written in non-technical language; descriptions of major research infrastructure (including centers, facilities, observatories, and research vessels); and easily accessible funding summaries, award details, and lists of recent awards and award abstracts. The funding and award information will be sortable by U.S. states and territories, along with information about “people of distinction” in each state/territory. Target audiences for SEE Innovation are federal, state and local public policy makers, science-related

organizations, industries with research and development (R&D) components, and the general public. Input from these groups has been sought as part of the site development and roll-out process. A beta version of SEE Innovation was demonstrated to the National Governors' Association (NGA) and the National Science Board (NSB) during the summer of 2010. The URL also was sent to representatives of target "user groups" (including General Motors, Dow Chemical, Hewlett-Packard, Boeing, the Alliance for Science and Technology in America (ASTRA), the State Science and Technology Institute (SSTI), the American Society of Chemical Engineers (ASME) and others), and they were asked to provide feedback. The responses are being analyzed to determine the site's effectiveness in meeting the needs of expected users, and to plan for future enhancements, which will be rolled out on a regular basis. Additional demonstrations are scheduled for the fall, with a wider launch of SEE Innovation scheduled for mid-October/early November 2010.

Individually, these three Research.gov services, Research Spending and Results, Project Outcomes Reporting, and SEE Innovation, provide valuable insight into NSF-funded projects and their outcomes, but they are also designed to marry seamlessly with each other to provide the public with a clear, comprehensive picture of NSF awards. Additionally, the information provided through these services is just the beginning. NSF is actively soliciting feedback from the science and engineering community and the public on additional information they would like to see made available through these services and Research.gov.

C. Public Outreach and Participation

NSF's task of identifying and funding work at the frontiers of science and engineering is not a "top-down" process. NSF operates from the "bottom up," keeping close track of research in the United States and around the world, maintaining constant contact with the science and engineering community to identify ever-moving horizons of inquiry, monitoring which areas are most likely to result in spectacular progress and choosing the most promising people to conduct research and enhance education and learning.

Participation and citizen engagement are at the core of the way NSF conducts its business and fulfills its mission. One of the cornerstones of NSF's success is its merit-review process. In making award decisions, NSF collects over 240,000 reviews per year from experts in the science and engineering community. Subject matter experts drawn from the science and engineering academic and private-public communities provide these reviews. NSF Program Officers draw on the expert insights provided in these reviews to make informed decisions about the most promising projects to fund. NSF is constantly striving to increase both the size and diversity (gender, disabilities, ethnic, geographic, race, institutional, etc.) of the pool of reviewers to ensure that the merit review process benefits from broad input provided by individuals with a wide range of perspectives. This merit-review

process, recognized as a gold standard internationally, continues to be a key element of NSF's public outreach and participation activities.

The agency's approach to soliciting input and feedback from the scientific community and the public has always been "early and often." To support this approach, NSF provides a variety of mechanisms both proactive (where the public can actively contact the Foundation) and direct (NSF reaches out directly to share information and solicit input), for the community and the public to interact with the agency and provide feedback. Examples of proactive forums the Foundation is employing to engage the public and the academic community and solicit their input include:

- **Open NSF webpage (<http://opennsf.ideascale.com/>)** - NSF used the IdeaScale tool provided by the General Services Administration to solicit ideas and suggestions from the public for the agency's Open Government Plan and to seek comments on the first version of the plan. NSF is now looking to use the IdeaScale tool in other public engagement activities, and the agency continues to monitor a special email alias (opengov@nsf.gov) for comments on the Open Government plan.
- **American Customer Satisfaction Index** – An online pop-up survey, used widely across both the government and private sector, which NSF employs to measure user satisfaction with information services. This survey offers quantitative data that NSF can use to benchmark itself to ensure that it is continuing to meet the community's needs.
- **Feedback email aliases** – NSF has multiple email aliases that the public and research community can use to reach out to the Foundation with questions or to provide feedback on a variety of topics, including NSF policy (policy@nsf.gov), NSF services (info@nsf.gov and feedback@research.gov), NSF's participation in Open Government (opengov@nsf.gov) and more.
- **Online feedback forms** – Available on the NSF website and Research.gov, the public can use feedback forms to proactively and anonymously submit feedback to the Foundation.

Feedback and inquiries received through online feedback mechanisms are monitored and suggestions are compiled for review and consideration. NSF representatives respond directly to inquiries received through feedback aliases and questions that appear frequently are incorporated into "Frequently Asked Questions" documents, which are posted online and distributed during outreach activities.

These online feedback mechanisms are complemented by a variety of interactive forums for direct outreach to the academic community, the public, and NSF staff to promote citizen participation. NSF frequently promotes awareness and provides updates about the agency, its policies and initiatives, and the information and services it provides to the research community through presentations and exhibit booths at key outreach events, such as meetings and conferences held by research

associations comprised of members of NSF's core science and engineering community (the Federal Demonstration Partnership, the National Council of University Research Administrators, and the Society of Research Administrators).

Additionally, NSF holds twice yearly Regional Grants Conferences in different areas of the country to provide an opportunity for smaller academic institutions to learn more about the agency and its programs. Similarly, the agency sponsors "NSF Day" workshops to stimulate new interest in NSF programs at institutions that have not been among its traditional customers. NSF's participation in these activities provides a forum to disseminate information and to interact directly with researchers and others to hear their feedback and answer their questions first-hand.

In addition to in-person outreach, NSF interacts directly with the research community and public through online outreach mechanisms. NSF frequently participates in research and grants-focused webcasts, such as those held twice a year by the Grants Policy Committee, which are available to be viewed by any member of the public at no cost. Webcasts allow NSF to share key information and updates with a broad audience and also provide the opportunity for viewers to interact directly with the Foundation through email or phone call inquiries, which are answered on air. *Providing live webcasts of meetings was one of the most popular requests NSF received during the recent OpenNSF public dialog, and NSF is now developing a method for determining which of its meetings would be of greatest interest to the public.* To educate the public and the community on NSF systems and services, NSF offers WebEx and videoconferences training. These training sessions allow institutions and individuals in locations all across the country to easily and conveniently learn about the Foundation first-hand.

In order to ensure that NSF staff members are armed with the background needed to disseminate information to the research community and the public about participation opportunities, NSF fosters a culture of education. The Foundation holds interactive outreach activities to educate staff, such as town halls, "brown bags", and demonstrations and provides detailed information online about participation opportunities and NSF initiatives (such as Open Government efforts) in visible forums that are accessible to all staff.

As mentioned earlier, NSF participated in the "IdeaScale brainstorming" exercise that was part of the open government directive initial activity. That particular exercise ended on March 19, 2010, and a second public engagement activity ran through June 23, 2010. Since then NSF has been considering other activities that would use the tool as a way of encouraging public input. The goal is to continue to look for ideas, from the general public, related to open government along the lines of transparency, participation, collaboration and innovation.

Each of the various directorates and offices has an advisory committee whose membership is drawn from the academic and public-private sector communities and they meet twice a year. The membership is such that they represent the stakeholders of the particular directorate or office or might span several

directorates and offices. These twice-yearly meetings are typically complemented by advisory committee task forces that meet on a more frequent basis. For example, the NSF-wide Advisory Committee for Cyberinfrastructure (ACCI) is gathering input from the researchers, industry and educators that use cyberinfrastructure. The ACCI established 6 Task Forces and has asked them to address long-term cyberinfrastructure issues.

By incorporating webcasts, video telecons, wiki's and document sharing technologies the task forces are exploring, discussing and generating a collection of recommendations and ideas that will be used by the NSF in developing new programs and/or guiding existing activities.

An additional resource is the National Science Board, charged with establishing NSF policy, and meeting 6 times per year. The NSB is made up of 24 Members appointed by the President and confirmed by the Senate. The NSF Director is an ex officio Member. Members serve six-year terms and one-third of the Board is appointed every two years. NSB Members are drawn from industry and universities, and represent a variety of science and engineering disciplines and geographic areas. The advisory committees and the NSB will be presented the NSF Open Government Directive Plan with the intent of soliciting from them additional ideas and approaches on how to even further increase NSF's transparency, collaboration and participation activities and to solicit from them potential NSF high-value related data that could be added to the inventory. The NSB also creates task forces consisting of NSB members and complemented by additional staff. These task forces, meeting on a more frequent basis than the NSB itself, are constituted as necessary to enable the NSB to execute their due diligence. For example, in September 2010 the NSB initiated a Task Force on Data Policies with a charge to "...further defining the issues and outlining possible options to make the use of data more effective in meeting NSF's mission." A draft final report is expected by May 2011.

Members of the NSF Senior Executive Service have been encouraged to include a stretch goal in the area of the open government directive. In addition, as members of NSF staff travel around the country giving presentations and participating in events, they will be encouraged to present NSF's interest in the open government directive and seek active participation and input from the public.

D. NSF Collaboration Activities and Agency Partnerships

Collaboration is not new to the NSF. Collaboration is intrinsic to NSF culture and the way that the agency conducts its business. NSF encourages both inter- and intra-foundation collaboration initiatives. NSF is also actively engaged in activities that involve collaboration with other agencies, citizens, as well as across NSF staff. Examples of this are evident through NSF's partnerships with the science and engineering community and agencies on Research.gov and through the use of technologies that promote collaboration among NSF staff.

NSF partners with other federal agencies in numerous research and education programs and provides a list of these agency partnerships, arranged alphabetically by program title, on the NSF website, at <http://www.nsf.gov/about/partners/fedagencies.jsp>. The agency has added a link to this list from the NSF Open Government page (<http://www.nsf.gov/open/>). NSF will update the list of multi-agency research and education programs twice a year, each June and December.

The various NSF directorates and offices are encouraged to develop programs that span divisions within directorates, that span across directorates and offices, that cooperate with activities taking place at other federal agencies or the private commercial sector and finally that establish international relationships. An example of an existing collaboration is the Cyber-enabled Discovery and Innovation (CDI) initiative. CDI has participation from every programmatic directorate and office within NSF.

One CDI effort that could be especially relevant to both public participation in science and open government is a study by NSF-supported researchers of an online suite of citizen-science projects called Zooniverse to determine the implications of public involvement in large-scale scientific activities. Zooniverse was developed by the Citizen Science Alliance with projects ranging from an effort to track solar explosions to an effort to understand how galaxies merge. The goal of the new study is to develop a new methodology for using citizen science to unlock the potential for deriving knowledge from modern, large data sets. To learn more about this research project, see:

http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=116658&org=NSF.

A recent example of interagency collaboration can be found in the Decadal and Regional Climate Prediction using Earth System Models (EaSM) program (<http://www.nsf.gov/pubs/2010/nsf10554/nsf10554.htm>), which involves NSF (indeed, the NSF participation spans multiple directorates and offices), the Department of Energy (DOE) and the United States Department of Agriculture (USDA). The objective of this new interagency effort is to produce high-resolution models for predicting climate change and its resulting impacts.

The NSF provides high-performance computational resources to other federal agencies via its TeraGrid⁴ resource, with 50 percent of that resource being utilized by agencies such as the National Institutes of Health, the Department of Energy, the National Aeronautics and Space Administration, the National Oceanic and Atmospheric Administration, and the Department of Defense.

NSF co-chairs the interagency Networking and Information Technology Research and Development (NITRD) program (<http://www.nitrd.gov/>). The NITRD Program, chartered by Federal law, is the primary mechanism by which the Government coordinates its unclassified networking and information technology (IT) research

⁴ <http://www.teragrid.org>

and development (R&D) investments. Thirteen Federal agencies, including all of the large science and technology agencies, are formal members of the NITRD Program. These agencies work together to develop a broad spectrum of advanced networking and IT capabilities to power Federal missions; U.S. science, engineering, and technology leadership; and U.S. economic competitiveness. Their efforts increase the overall effectiveness and productivity of Federal networking and IT R&D investments, leveraging strengths, avoiding duplication, and increasing interoperability of networking and IT R&D products. NSF program officers participate in each of the NITRD Program Component Areas (PCAs). The work of each PCA is guided by an Interagency Working Group (IWG) or a Coordinating Group (CG) of interagency program managers. These groups meet monthly to coordinate planning and activities of the multiagency projects in their specialized research areas. In addition, PCAs hold workshops to solicit input from their respective stakeholder communities.

NSF has co-funded awards with the Bill and Melinda Gates Foundation and the Kellogg Foundation as well as others. Recent examples of working with the commercial sector can be found in cloud-computing initiatives with Google and IBM, HP, Intel, and Yahoo; and, most recently, Microsoft. Inter-governmental collaboration can be found in the NSF Experimental Programs to Stimulate Competitive Research (EPSCoR) program where NSF co-funds awards supported by the various state and regional governments. The Office of International Science and Engineering (OISE) spearheads international collaboration initiatives. A recent example in the international arena is the creation of a new pilot framework for conducting international research being executed by the Heads of the Research Councils of the G8 states (G8-HORCs). The initiative aims at supporting excellent research on topics of global relevance that can best be tackled by a multinational approach.

Collaboration is an underlying principle of NSF's Informal Science Education (ISE) program within the Directorate for Education and Human Resources. ISE invests in projects that promote lifelong learning of science, technology, engineering, and mathematics (STEM) by the public in a wide variety of informal learning environments, including museum exhibits, award-winning films, television and radio series, summer science camps, and community and other outreach programs. The emphasis is on enhancing STEM learning for people of all ages. Some examples of projects funded through the ISE program are found at http://www.nsf.gov/news/now_showing/. A list of recent projects funded through the program, with links to the award abstracts are found http://www.nsf.gov/awardsearch/progSearch.do?WT.si_n=ClickedAbstractsRecentAwards&WT.si_x=1&WT.si_cs=1&WT.z_pims_id=5361&SearchType=progSearch&page=2&QueryText=&ProgOrganization=&ProgOfficer=&ProgEleCode=7259,7774&BooleanElement=true&ProgRefCode=&BooleanRef=true&ProgProgram=&ProgFoaCode=&RestrictActive=on&Search=Search#results.

Collaboration is also a common element in the way that NSF staff performs its work and NSF is facilitating this through the technologies it offers to staff. One notable example is SharePoint, a collaboration portal that staff can use to instantly access and share information securely anytime, anywhere. SharePoint offers a customizable suite of tools that can be tailored to NSF staff needs and is used to create workspaces where they can manage and collaborate on documents, share information, track action items, and stay connected online. To date, staff has leveraged SharePoint to connect and collaborate with individuals beyond their offices and branches and to establish efficiencies, such as automatic workflows. NSF will continue to research ways to further facilitate collaboration between staff through technology, looking for additional ways to leverage existing platforms, such as SharePoint, and identifying new technologies that will benefit staff.

For many years, NSF has worked closely with the research community; gathering input to guide the direction of NSF's innovative technology solutions in support of NSF's mission and the research community's needs, and NSF's approach to developing Research.gov has been no different. NSF's active collaboration and partnership with the research community is evident through Research.gov's service delivery model. New services for Research.gov are identified and prioritized based on input received from the research community. To test new services, NSF collaborates with volunteers from the community who participate in pilots and betas of new services and provide feedback and input on their experience. These collaborations allow the Foundation to ensure services meet user needs before being released to the broader community.

With Research.gov, NSF has established collaborative partnerships with three federal research agencies, the National Aeronautics and Space Administration (NASA), the Department of Defense (DoD), and USDA's National Institute for Food and Agriculture (USDA/NIFA), in order to offer the research community and the public key information and services for these agencies in one location. These formal partnerships, established through Memoranda of Understanding, provide a shared platform for the research community to do business with agencies that share a common mission and business model. This collaboration provides the opportunity for agencies to work together to consolidate information resources, improve access to information about federally funded research, and implement government-wide standards. Examples of this on Research.gov include:

- **Policy Library** - Offers the research community, the public, and federal agencies consolidated access to government-wide and agency-specific policies, guidelines, and procedures for NSF and partner agencies in one location. The Policy Library also provides a visible location for notifying the public about draft government-wide and agency-specific policies available for review and comment in the Federal Register.
- **Research Spending and Results** - Displays information, available to the public, about how NSF and NASA grant award dollars are being spent, what

research is being performed, and how the outcomes of the research are benefiting society.

- **Federal Financial Report** – Research.gov service to prepare and submit financial reports using the new government-wide standard form. NSF is interested in offering this service for use by other agencies in the future.
- **Research Performance Progress Reports** – NSF and NASA are collaborating to deliver this future Research.gov service, which will enable awardees to prepare and submit interim progress reports for research and research-related projects using the new OMB/OSTP approved government-wide format.

To inform the initial business requirements for this new service, NSF and NASA are conducting detailed stakeholder analysis, holding focus groups with agency program staff who are directly involved in working with the researchers that will be submitting the reports, and carefully analyzing the pain points expressed by researchers that led to the development of this new government-wide standard. In keeping with NSF's proven model for grantee service development, these requirements will be used to inform development of an initial pilot service, which volunteers from the research community will have an opportunity to try out and provide feedback on. This feedback will be used to make changes and enhancements to the service to ensure it meets user needs prior to releasing the service to the broader community.

NSF and NASA have already begun to work together to develop the initial business requirements for this new service and will continue to collaborate throughout the full scope of service delivery, including additional planning, technical implementation, and outreach once the service is available. In addition to continuing this collaboration with NASA, NSF is interested in opportunities to partner with other agencies to offer this new capability in the future.

- **Researcher Profile Update** – In part in direct response to feedback received through NSF's Open Government dialog with the public, the Foundation is looking into opportunities to partner with other research agencies to provide a service to integrate researcher profiles across agencies, decreasing the administrative burden on researchers associated with maintaining multiple agency profiles. This will also allow researchers to proactively keep information up-to-date, such as institution affiliation and contact information, and volunteer for agency activities, such as participating on panel reviews for proposals.

In addition to partnering on services, NSF collaborates with its partner agencies to promote awareness about Research.gov and the common research mission across the research community and the public. NSF and partner agencies employ shared outreach materials, such as fact sheets and online demos (available on CD and via YouTube), to educate stakeholders about the research mission, Research.gov, and its services. Additionally NSF and partner agencies work together on shared outreach opportunities. For example, NSF and partner agencies conduct joint presentations at key research association meetings.

These agency partnerships are just the beginning. NSF is interested in pursuing Research.gov partnerships with other federal research agencies and looking into opportunities to work with existing partners on new services and increased outreach opportunities.

NSF recognizes the value of collaboration at all these various scales of activity and shall continue to explore new and innovative methods to engage partners in ways that enhance the various missions, support the science, engineering and education communities and generate value to the American public.

E. Records Management

The National Science Foundation (NSF) is dedicated to a transparent approach to records management by maintaining thorough, accessible electronic records of agency business. One way that NSF offers clear insight into its electronic management processes is by posting its records retention schedule on the Foundation web site (<http://www.nsf.gov/policies/records/index.jsp>) where it is easily accessible to any member of the public. The schedule uses plain language to describe the different types of records that NSF is required to retain and the period for which they are retained. The NSF website provides the public with detailed information for accessing the different types of records, such as step-by-step instructions for submitting Freedom of Information Act (FOIA) requests. NSF is also actively identifying and leveraging opportunities to make records that do not contain sensitive or personally identifiable information readily available to the public. For example, records such as press releases, transcripts of official speeches, and formal publications are already made available to the public through the Foundation website.

NSF recently received approval from the National Archives and Records Administration for electronic archival of NSF's permanent records (in addition to non-permanent records), such as records of grant awards that have been made by the Foundation. To support this, NSF is implementing a commercial-off-the-shelf electronic records management (ERM) solution, which will allow the Foundation to make records management more efficient by automating many of the related processes. For example, the Foundation will no longer need to spend valuable time and resources preparing and storing paper records or shipping them to NARA. The ERM system will integrate with other NSF systems to electronically pull and store retired records and then prepare and transmit the records quickly and seamlessly to NARA when they are ready for archival. Additionally, the ERM system provides key features, such as automatic notifications for when records are ready to be retired, which will help increase the timeliness of award archival.

NSF is also actively exploring opportunities to leverage the ERM system to further increase transparency to the public. For example, NSF is looking into the feasibility of providing records information through electronic reading rooms. Historically, to view NSF records, the public has had to either physically visit the Foundation or be sent copies of the records through the mail, both of which can take time and may

result in indirect (e.g., travel costs) or direct (e.g., mail and copying costs) costs to the requestor. Additionally, before records could be made available, the records also had to be manually redacted to remove sensitive information, a time-consuming process. Through electronic reading rooms, members of the public could access and view requested records quickly and easily at no cost to them from anywhere across the country. Features available through these reading rooms could also be leveraged to automatically redact sensitive information, decreasing the amount of time and resources spent preparing records for public viewing. NSF will look at best practices from across the federal government and research opportunities such as these to identify the most appropriate and effective ways to leverage this technology for the ultimate benefit of the public.

V. OTHER OPEN GOVERNMENT ACTIVITIES

A. Freedom of Information Act (FOIA)

NSF has a long tradition of making its FOIA responses openly available and accessible to the public and hence there is no backlog in this area. FOIA data are currently available at <http://www.nsf.gov/policies/foia.jsp> covering the fiscal years 1998 through 2009 and are available in DOC, HTML, PDF and TXT formats. As part of the initial dataset population, in response to the Open Government Directive, the NSF has made available the FY2009 data in XML open standard format. Currently, the plans are to convert the existing datasets, FY1998-FY2009, to XML and provide access via <http://www.data.gov/> and <http://www.nsf.gov/open/>. It is anticipated this will be completed during FY2010. Making the results of NSF-supported research public was a popular suggestion among the people who provided ideas and comments during the public engagement activity that was part of developing the open government plan.

The NSF Office of General Council (OGC) corresponds electronically with FOIA requesters and recognizes the need for an open and active dialog with the NSF Chief Information Officer (CIO) and as a result has an ongoing communication with the CIO. In addition, the OGC is a member of the CIO's Security and Privacy Working Group as well as attends CIO council meetings on behalf of the CIO.

B. Congressional Requests for Information

Congressional requests for information typically are addressed to the NSF Director in the Office of the Director (OD). They are there assigned by the Congressional Affairs Section to the organizational unit, within the NSF, that has the necessary background and information consistent with providing a cogent response. The assignment is made with a timeframe as to when the response is required with the response sent to the requester following necessary clearance processes.

C. OLPA

The Office of Legislative and Public Affairs (OLPA) communicates information about the activities, programs, research results and policies of the National Science Foundation. OLPA employs a wide variety of tools and techniques to engage the general public and selected audiences including Congress, the news media, state and local governments, other Federal agencies, and the research and education communities.

The Foundation's activities to expand science literacy of all citizens rely to a great extent on collaboration and public participation. Examples include the following:

News From the Field

News From the Field is one of NSF's efforts to make the public aware of the results of foundation-supported research and education activities. Many of the research institutions receiving NSF support publish their own news releases describing advances and breakthroughs achieved by their researchers and students, and naming the journals or other publications in which the results are announced. Since 2006, NSF has collected these news items and published brief summaries of them, along with links to the full news stories on the agency Web site, as "News From the Field." This brings together in one place a larger number of the discoveries made possible by NSF support. The public can receive automatic updates via an RSS feed or GovDelivery alert notification. With more than 2,600 news items published and the number increasing each day, News From the Field greatly enhances the public's ability to learn about the results of taxpayer-supported research. See http://www.nsf.gov/news/news_list.cfm?nt=12 for News From the Field.

International Science and Engineering Visualization Challenge

Visuals can communicate research results and scientific phenomena in ways that mere words cannot. As the need to increase science literacy grows more urgent, illustrations can provide immediate and influential connections between scientists and other citizens, and may be the best hope for nurturing popular interest. For these reasons, NSF partnered with the journal *Science* to create the "International Science & Engineering Visualization Challenge." The competition seeks to encourage and expand the participation of people engaged in communicating science, engineering and technology for education and journalistic purposes. Judges appointed by NSF and *Science* select winners in each of five categories: Photography, Illustrations, Informational Posters and Graphics, Interactive Games, and Non-Interactive Media. The winning entries appear in a special section in *Science* and *Science Online*, and on the NSF Web site. One of the winning entries is featured on the cover of *Science*, and each winner receives subscriptions to *Science* and *Science Online* and a certificate of appreciation. The challenge has resulted in a growing library of award-winning visualizations available for use by teachers, students and the public. The competition's first winners were announced in 2003, and submissions are now being accepted for the 2010 challenge. Plans for the future include the addition of a public engagement activity that would allow the public to vote for winners among the semi-finalists, similar to the selection of "People's Choice" winners in other award competitions. There are also early plans to develop a companion science and engineering visualization challenge aimed at high school students. See http://www.nsf.gov/news/special_reports/scivis/index.jsp for the International Science and Engineering Visualization Challenge.

NSF Multimedia Gallery

NSF maintains a collection of illustrations, photos, animations, videos and audios covering all areas of science and engineering that the agency supports. Content for the NSF Multimedia Gallery (MMG) consists of works created by staff and contractors (as works for hire), and also by others outside of the agency who have granted NSF permission to make their materials available for educational and

informational purposes. To date, the MMG collection includes more than 2,200 images. See <http://www.nsf.gov/news/mmg/> for the Multimedia Gallery.

Science360.gov: The Knowledge Network

NSF recently launched Science360.gov: The Knowledge Network, a new multimedia Web portal devoted to all things scientific, technological and engineering. The current site is rich with video content, and future versions will include extensive collections of audio and video materials, images and articles. In developing the site, NSF contacted about 140 science-focused audio providers for the purpose of creating formal agreements for sharing audio programs, and has agreements with 65 of them. Discussions continue with others who have indicated their interest in collaborating with NSF. There are more than 75 video suppliers who have given NSF approximately 500 videos to date. The Science360.gov: The Knowledge Network site offers visitors a wide range of content that spotlights research and engineering advances and communicates the significance of science and engineering in our daily lives. The Science360.gov: The Knowledge Network website also provides a link to the Science360 News Service, a compilation of news gathered from wherever science is happening, including directly from scientists, college and university press offices, popular and peer-reviewed journals, dozens of NSF science and engineering centers, and funding sources that include government agencies, not-for-profit organizations and private industry. The news service's podcasts, videos, images and news briefs are distributed as daily updates to subscribers. For more information, see: <http://www.science360.gov/files/> and <http://news.science360.gov/files/>.

Communicating Science Broadly

NSF collaborates with numerous public and private partners who share the agency's commitment to communicating science broadly. For example, NSF is currently partnering with NBC News' educational arm, NBC Learn, and the National Football League (NFL) on the release of a special report, the "Science of NFL Football"--an informative 10-part video series that explores the science behind America's most beloved sport. The collaboration uses the universal appeal of football to help students understand specific scientific principles such as Newton's Three Laws of Motion, kinematics and projectile motion. Lessonopoly, Silicon Valley Education Foundation's online repository of open educational resources, is providing lesson plans for teachers to accompany the videos. For more information, see: http://www.nsf.gov/news/special_reports/football/index.jsp. NSF's Science for Everyone! webpage (<http://www.nsf.gov/news/newsmedia/sciencefrontiers/>) includes links to additional science and engineering news produced by NSF and its partners.

VI. NSF OPEN GOVERNMENT INITIATIVES

A. Tools and Social Media

To continue to increase participation, NSF has recognized that social media are becoming increasingly important tools for engaging with its stakeholders and with citizens. NSF has established a Facebook page (<http://www.facebook.com/US.NSF>) that NSF is using to connect with others interested in science and engineering, and to engage in dialogs with the public about NSF's activities. NSF also has a YouTube site (<http://www.youtube.com/user/VideosatNSF>) where science-themed videos are available for viewing and for comments. NSF is developing a Flickr site (http://www.flickr.com/photos/nsf_beta) that will make available research and education photos and illustrations for others to use in communicating science. And NSF has a number of Twitter feeds, including the main NSF feed (<http://twitter.com/NSF>) to extend its communication and outreach activities. The NSF Twitter feed has attracted more than 28,000 followers. NSF lists all of the social media it is currently using at <http://www.nsf.gov/social/>. To guide NSF's further use of social media, the agency has established a working group to research social media best practices from across the government and private sector and formulate recommendations for the most appropriate and effective ways for the Foundation to leverage social media.

NSF also uses Wikis, for example, the NSF BIO Directorate is using a wiki to engage their Principal Investigators to provide ideas for tools and resources that could be used by their community.

B. Flagship Initiatives

NSF funds basic research and so it is totally consistent that NSF flagship activities include research components that can contribute to the open government directive.

One activity that the NSF is currently funding and could be especially relevant to both public participation in science and open government is a study by NSF-supported researchers of an online suite of citizen-science projects called Zooniverse to determine the implications of public involvement in large-scale scientific activities. Zooniverse was developed by the Citizen Science Alliance with projects ranging from an effort to track solar explosions to an effort to understand how galaxies merge. The goal of the new study is to develop a new methodology for using citizen science to unlock the potential for deriving knowledge from modern, large data sets. To learn more about this research project, see:

http://www.nsf.gov/discoveries/disc_summ.jsp?cntn_id=116658&org=NSF.

Another promising activity is in the area of assessment of research investments as exemplified by the STAR METRICS project⁵. Working with the Office of Science and

⁵ Science and Technology in America's Reinvestment---Measuring the Effect of Research on Innovation, Competitiveness, and Science

Technology Policy (OSTP), the National Institutes of Health (NIH) as well as other agencies that comprise the National Science and Technology Council (NSTC) a data-driven analytical capability is being developed to assess the impact of federal investments in science and engineering education.

The NSF is still in the process of evaluating additional candidates for exciting flagship initiatives that highlight NSF's commitment to science and engineering research and education. One possible activity would to fund research exploring the federal government's open government directive and its effectiveness.

VII. PROGRAM EVALUATION

As previously stated, each Directorate/Office has an Advisory Committees (AC) associated with that NSF unit. These ACs will be tasked, in addition to their current activities, with providing an evaluation for that unit's participation in the NSF Open Government Directive. This will be complemented by the periodic meetings of the NSF OGD Working Group which will look at the comments/suggestions being made by the public to the open government email alias (opengov@nsf.gov). An evaluation will be made as to NSF's ability to provide timely responses to viable suggestions.

Finally, the opportunity exists to use the Committee of Visitors, an external body of experts convened to evaluate specific Divisions and/or programs within the foundation, as a mechanism to evaluate participation in the open government initiative.

A. Issues

Open access to data generated by the principal investigators being funded by NSF is an issue that the NSF and the NSB are currently actively addressing. The NSF has a Data Working Group, one of whose tasks is to collect information and look at mechanisms and related matters on the topic of open access to data. This is an issue not only for the NSF but for other agencies as well. Indeed, it is a global issue as different countries attempt to address this need and as NSF increases its international collaborations.

An additional area that receives public commentary has to do with access to other data requested. There is some data that NSF cannot provide, as NSF needs to observe confidentiality and privacy concerns. Like all Federal agencies, the NSF is bound by the Privacy Act of 1974 to protect the confidentiality of the records it maintains about individuals. Further, even when data are not covered by the Privacy Act, it may be necessary to assure respondents (both individuals and institutions) that NSF will not divulge the information they provide to us except in a format that will not permit identification of the respondent. NSF is, of course, obligated to honor all such assurances. NSF confidentiality guidelines also restrict the release of individual proposals, or similar documents, sent to the NSF for consideration⁶. The Foundation receives proposals in confidence and protects the confidentiality of their contents

⁶ NSF Proposal and Award Manual (PAM) 2009: NSF Manual #10

APPENDIX 1: DEVELOPMENT OF THE OPEN GOVERNMENT PLAN

NSF sought input from the public in developing its Open Government plan. The agency's OpenNSF engagement used the IdeaScale public dialog application. NSF promoted the dialog through a variety of outreach methods, including an item in the Current (NSF newsletter), a news release, items distributed to NSF's GovDelivery and RSS subscribers, announcements on NSF's Twitter and Facebook (social media) sites, an all-staff memorandum, and email blasts to key external groups such as the news media, public information officers at research institutions, and members of science and engineering societies and organizations that are interested in science policy. A link to the dialog was prominently featured on the NSF homepage and also on the agency's Open Government page.

NSF permitted the public's ideas and comments to be posted to the OpenNSF dialog site without pre-moderation. The agency's moderation team monitored the site, removed ideas and comments that violated the terms of participation, moved ideas that did not address open government issues to an off-topic site, responded to questions or directed them to the proper authority, and interacted with the public through moderator comments and/or emails to contributors.

The OpenNSF site received 59 ideas, 85 comments and 529 votes. Ideas were submitted by 46 different authors. The 10 most popular ideas, based on the vote totals (positive votes minus negative votes), were:

1. Require all taxpayer research to be freely available (83 votes)
2. Public funding = public viewing/require all publicly funded projects to publish as open access and all data and code shared as open source (56 votes)
3. NSF should live webcast all meetings (36 votes)
4. Fund proposals, not projects near completion (28 votes)
5. Better explain knowledge economy/need a "Marshall Plan"-type mobilization to ensure citizens understand the importance of innovative, scientific research and how that translates into the many various impacts on our economy. (18 votes)
6. Open source desktop software/implement non-proprietary computer desktop to NSF employees, contracts and grantees (17)
7. Publicize OLPA products to K-12 superintendents and teachers (14)
8. Connect NSF scholars to government jobs (14)
9. Open category for SBIR/ a "what do you have that we don't know about" category (14)
10. Conflict of interest transparency (13)

The ideas, along with comments and discussion, can be viewed on the OpenNSF dialog site (<http://opennsf.ideascale.com>).

APPENDIX 2: NSF OPEN GOVERNMENT DIRECTIVE DATA COLLECTION

NSF data collections available at <http://www.nsf.gov/open/> as of April 7, 2010 are shown below along with brief descriptions of their contents. These will be augmented periodically as new high-value datasets are identified and converted to the necessary machine-readable format.

NSF Freedom of Information Act Report for October 1, 2008 through September 30, 2009

Statistical information on the number of FOIA requests received and processed by NSF in FY09, response times for FOIA requests, the number of appeals received, and other statistics on NSF's FOIA program.

[NSF.gov](#) | [Data.Gov](#)

NSF Graduate Research Fellowship Program Award Recipients, 2000-2009

NSF's Graduate Research Fellowship Program (GRFP) provides three years of support for graduate study leading to research-based masters or doctoral degrees in disciplines relevant to the mission of the Foundation. This dataset includes GRFP award recipients.

[Data.Gov](#)

NSF Graduate Research Fellowship Program Honorable Mention Recipients, 2000-2009

NSF's Graduate Research Fellowship Program (GRFP) provides three years of support for graduate study leading to research-based masters or doctoral degrees in disciplines relevant to the mission of the Foundation. This dataset includes GRFP Honorable Mention recipients.

[Data.Gov](#).

NSF Research Grant Funding Rates

FY 2009 NSF funding rates for competitive research proposals by organizational unit. The funding rate is calculated by dividing the number of awards by the number of awards and declines.

[Data.Gov](#).

SESTAT

SESTAT is a database of the employment, education, and demographic characteristics of the nation's scientists and engineers. The data are collected from the following three surveys, which have been sponsored every two years since 1993 by the National Science Foundation (NSF):

- National Survey of College Graduates (NSCG)
- National Survey of Recent College Graduates (NSRCG)
- Survey of Doctorate Recipients (SDR).

Only the NSRCG and SDR were conducted in 2001.

Information from these surveys has been integrated into the SESTAT database. The SESTAT database allows for analyses of different components of the science and

engineering workforce. When accessing SESTAT, the user may select the integrated database for 1993, 1995, 1997, or 1999. In addition, data from the individual surveys maybe accessed for special analytical purposes. Access to some data may be restricted due to confidentiality considerations.

[Data.Gov](#)

Research Spending and Results

Research.gov Research Spending and Results is an online, user-friendly platform to access and search detailed information about federally funded science and engineering research and education, giving the general public, the scientific community and Congress visibility into the results achieved with federally-funded research. Research awards are easily searchable by agency, awardee, award amount and date, state and congressional district (where award was made and the work is being performed), and key word such as a field of science. Information can be reviewed online or exported to various file formats, such as XML, CSV and XLS. Detailed information on federally funded research can be found for multiple agencies. Information provided for each award includes: Award recipient (institution and researcher), Award Amount and funds obligated to date, Period of Performance, State and Congressional district of where the award was made and where the work is being performed., Award Abstract describing the research effort, Citations of Journals Published as a result of the award.

[Data.Gov](#)

Key Science and Engineering Indicators: Digest 2010

This digest of key S&E indicators draws from the National Science Board's Science and Engineering Indicators report. The digest serves to draw attention to important trends and data points from across Indicators and to introduce readers to the data resources available in the report.

[Data.Gov](#)

NSF Grants Management and Information on Research Spending and Results

Here you can also find information about how NSF and NASA grant award dollars are being spent, what research is being performed, and how the outcomes of the research are benefiting society.

[Research.Gov](#)

Comprehensive Information on Federal Spending by Agency and Spending Type

Have you ever wanted to find more information on government spending? Have you ever wondered where Federal contracting dollars and grant awards go? Or perhaps you would just like to know, as a citizen, what the Government is really doing with your money.

[USASpending.Gov](#)

NSF Spending Under the American Recovery and Reinvestment Act of 2009

Recovery.gov is the U.S. government's official website providing easy access to data related to Recovery Act spending and allows for the reporting of potential fraud, waste and abuse.

[Recovery.Gov Track the Money](#)

Performance of NSF Major IT Investments

The Performance Dashboard tracks information technology (IT) investments self-reported by federal agencies and departments as "major". Major investments (Agency's Exhibit 300s) represent only a portion of the agency's entire IT portfolio (Agency's Exhibit 53).

[IT Dashboard](#) SeptemberSeptemberSeptember

APPENDIX 3: LIST OF ACRONYMS

BIO	Biological Sciences Directorate
CDI	Cyber-enabled Discovery and Innovation
CFO	Chief Financial Officer
CIO	Chief Information Officer
CISE	Computer and Information Science and Engineering Directorate
COV	Committee of Visitors
CTO	Chief Technology Officer
CSV	Comma Separated Values
DoD	Department of Defense
DoE	Department of Energy
EaSM	Decadal and Regional Climate Prediction using Earth System Models
EHR	Education and Human Resources Directorate
ENG	Engineering Directorate
EPSCoR	Experimental Programs to Stimulate Competitive Research
FOIA	Freedom of Information Act
G8-HORCs	Heads of the Research Councils of the G8 states
GEO	Geosciences Directorate
ISE	Informal Science Education
MPS	Mathematical and Physical Sciences Directorate
NASA	National Aeronautics and Space Administration
NSB	National Science Board
NSF	National Science Foundation
OD	Office of the Director
OCI	Office of Cyberinfrastructure
OGC	Office of the General Counsel
OGD	Open Government Directive
OGD-WG	Open Government Directive Working Group
OIG	Office of Inspector General
OISE	Office of International Science and Engineering

OLPA	Office of Legislative and Public Affairs
OMB	Office of Management and Budget
OPP	Office of Polar Programs
OSTP	Office of Science and Technology Policy
PI	Principle Investigator
POR	Project Outcome Reports
S&E	Science and Engineering
SAO	Senior Accountable Official
SBE	Social, Behavioral and Economic Sciences
SMART	Senior Management Advisory Roundtable
STEM	Science, Technology, Engineering and Mathematics
USDA	United States Department of Agriculture
XML	eXtensible Markup Language